

## WEST

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File: USPT

Aug 21, 2001

US-PAT-NO: 6277344

DOCUMENT-IDENTIFIER: US 6277344 B1

TITLE: Simultaneous use of peroxygen and olefin compound in odor reduction

DATE-ISSUED: August 21, 2001

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US-CL-CURRENT: 423/210; 423/220, 423/226, 423/236, 423/238, 423/242.1, 423/242.2,  
423/242.3, 423/243.01, 423/245.2

## CLAIMS:

We claim:

1. A process for removing an odor component from an atmospheric effluent, the process comprising:
  - (a) contacting an atmospheric effluent comprising an odor component with an aqueous peroxygen treatment composition and an olefin compound, forming an oxidized odor component and dissolving the oxidized odor component or an odor component in the aqueous treatment composition to form a treated effluent and a used aqueous treatment containing the odor component or oxidized odor component;
  - (b) removing at least a portion of the used treatment; and
  - (c) returning the treated effluent to the atmosphere.
2. The process of claim 1 wherein the atmospheric effluent originates from a plant treating organic material, the odor selected from the group consisting of an organic sulfur compound, an oxo-hydrocarbon, an organic nitrogen and mixtures thereof.
3. The process of claim 1 wherein the odor is removed as measured by an odor threshold score which is reduced by 20% or more.
4. The process of claim 1 wherein a wet scrubber tower is used to contact the effluent with the treatment composition.
5. The process of claim 1 wherein a venturi contactor is used to contact the effluent with the treatment composition.
6. The process of claim 4 wherein in the wet scrubber tower, the atmospheric effluent is a gaseous stream passing vertically against a countercurrent flow of finely divided particulates or thin streams of the aqueous peroxygen treatment composition.
7. The process of claim 1 wherein the aqueous peroxygen treatment composition comprises a peroxyacetic acid composition.
8. The process of claim 7 wherein the aqueous treatment composition comprises less than 4 parts by weight of acetic acid per each part of peroxyacetic acid and a sequestrant.

9. The process of claim 7 wherein the aqueous treatment composition comprises less than 2.5 parts by weight of acetic acid per each part of peroxyacetic acid.
10. The process of claim 7 wherein the aqueous treatment composition comprises less than 5 parts by weight of hydrogen peroxide per each part of peroxyacetic acid.
11. The process of claim 7 wherein the aqueous treatment composition comprises less than 2 parts by weight of hydrogen peroxide per each part of peroxyacetic acid.
12. The process of claim 1 wherein the aqueous peroxygen treatment composition comprises a residual acetic acid concentration of less than about 600 parts by weight per one million parts of the treatment composition.
13. The process of claim 1 wherein the aqueous peroxygen treatment composition comprises a residual acetic acid concentration of less than about 400 parts by weight per one million parts of the treatment composition.
14. The process of claim 1 wherein the aqueous peroxygen treatment composition comprises a residual acetic acid concentration of less than about 300 parts by weight per one million parts of the treatment composition.
15. The process of claim 1 wherein the aqueous peroxygen treatment composition comprises a residual peroxyacid and hydrogen peroxide concentration resulting in an active oxygen concentration of less than about 400 parts by weight of active oxygen per one million parts of the treatment composition.
16. The process of claim 1 wherein the aqueous peroxygen treatment composition comprises a residual peroxyacid and hydrogen peroxide concentration resulting in an active oxygen concentration of less than about 270 parts by weight of active oxygen per one million parts of the treatment composition.
17. The process of claim 1 wherein the aqueous peroxygen treatment composition comprises a residual peroxyacid and hydrogen peroxide concentration resulting in an active oxygen concentration of less than about 150 parts by weight of active oxygen per one million parts of the treatment composition.
18. The process of claim 7 wherein the aqueous treatment composition comprises a concentrate that comprises 1 to 90 weight percent (wt %) of acetic acid, 1 to 50 wt % of hydrogen peroxide, a sequestrant, and 1 to 40 wt % of peroxyacetic acid.
19. The process of claim 8 wherein the sequestrant comprises 1-hydroxyethylidene-1,1-diphosphonic acid.
20. The process of claim 6 wherein one cubic foot of atmospheric effluent is contacted with about 0.01 to 10 liters of aqueous treatment composition.
21. The process of claim 1 wherein at least about 20% of an odor forming compound selected from the group consisting of an oxo-hydrocarbon, organomercaptan, an amine, ammonia, hydrogen sulfide and mixtures thereof, is absorbed and removed in the process from the atmospheric effluent and wherein the odor threshold is reduced by at least 20%.
22. The process of claim 6 wherein the scrubber comprises a packed column.
23. The process of claim 6 wherein, in the wet scrubber tower, the atmospheric effluent is a gaseous stream passing vertically with a concurrent flow of finely divided particulates or thin streams of the aqueous peroxygen treatment composition.
24. The process of claim 1 wherein the olefin compound comprises an unsaturated carboxylic acid.
25. The process of claim 24 wherein the unsaturated carboxylic acid comprises an unsaturated dicarboxylic acid.
26. The method of claim 24 wherein the unsaturated carboxylic acid comprises acrylic acid, methacrylic acid, glutaconic acid, methacrylate or mixtures thereof.
27. The method of claim 1 wherein the olefin comprises an unsaturated carboxyl ester.

28. The method of claim 27 wherein the unsaturated carboxyl ester comprises vinyl acetate.
29. The method of claim 24 wherein the unsaturated carboxylic acid comprises undecylenic acid, tall oil, fatty acid, ricinoleic acid, oleic acid, linoleic acid or mixtures thereof.
30. The method of claim 24 wherein the unsaturated carboxylic acid comprises a carboxylic acid ester, sulfonate, sulfate or alkoxylate thereof.
31. The method of claim 24 wherein the unsaturated carboxylic acid comprises an unsaturated carboxylic triglyceride.
32. The method of claim 1 wherein the olefin compound comprises a polyolefin.
33. The process of claim 1 wherein the olefin compound comprises an essential oil.
34. The process of claim 33 wherein the essential oil is a terpene.
35. The process of claim 34 wherein the terpene is selected from the group consisting of citral, camphor, .alpha. and .beta.-pinene, terpineol, limonene, .alpha. and .beta.-terpinene, .alpha. and .beta.-phellandrene, cedrene, geraniol, linalool, nerol and abietic acid.
36. The process of claim 34 wherein the terpene is selected from the group consisting of mono-, di-, tri- and tetra unsaturated olefin terpenes.
37. The process of claim 34 wherein the terpene is selected from the group consisting of citral, camphor, .alpha. and .beta.-purene, terpineol and limonene.
38. The process of claim 33 wherein the essential oil is an aldehyde.
39. The process of claim 38 wherein the aldehyde is selected from the group consisting of benzaldehyde and cinnamaldehyde.